

CLAIMS:

1 ~~5/21~~ 1. A catalyst composition for the oxidative dehydrogenation of a
 2 compound having at least two adjacent carbons atoms bonded to one another and each
 3 carbon atom having at least one hydrogen atom bonded thereto comprising



4
 5 wherein A is an alkali or alkaline earth metal; B is one or more optional elements
 6 selected from zinc, cadmium, lead, nickel, cobalt, iron, chromium, bismuth, gallium,
 7 niobium, tin and neodymium; and a is 0 to 0.3, b is 0 to 5, c is 0.5 to 10, d is 1, e is 3
 8 to 10, $7 \leq a+b+c+d+e \leq 25$, and x is determined by the valence requirements of the
 9 elements present.

1 2. The catalyst of claim 1, wherein the catalyst composition is of an
 2 amorphous structure.

1 ~~3/2~~ 3. The catalyst of claim 1, having a surface area of from about 130 to
 2 about 150 meters squared per gram.

1 ~~3/1~~ 4. The catalyst of claim 1, wherein the catalyst was produced at a
 2 calcination temperature of from about 450 °C to about 650 °C.

1 ~~4/1~~ 5. The catalyst of claim 1, wherein to reach the calcination temperature
 2 an elevating temperature velocity of about 20 °C per minute was utilized.

1 ~~4/1~~ 6. The catalyst of claim 1, wherein the catalyst composition is on a
 2 support.

1 ~~6/1~~ 7. The catalyst of claim 1, wherein the support contains substantially no
 2 aluminum.
 3

1 The catalyst of claim 7, wherein the support is silica, titania or
2 zirconia.

1 The catalyst of claim 1, wherein a is from about 0.01 to about 0.1; b is
2 from about 0.1 to about 1; c is from about 0.5 to about 3; e is from about 4 to about 7;
3 and x is determined by the valence of the elements present.

1 The catalyst of claim 1, wherein A is at least one of the elements
2 selected from the group consisting of potassium, cesium, magnesium and barium and
3 wherein B is at least one of the elements selected from the group consisting of zinc,
4 nickel, cobalt, iron, bismuth and niobium.

1 11. A method for oxidative dehydrogenation of a compound having at least
2 two adjacent carbons atoms bonded to one another and each carbon atom having at
3 least one hydrogen atom bonded thereto comprising contacting said compound with a
4 catalyst comprising



6 wherein A is an alkali or alkaline earth metal; B is one or more optional elements
7 selected from zinc, cadmium, lead, nickel, cobalt, iron, chromium, bismuth, gallium,
8 niobium, tin and neodymium; and a is 0 to 0.3, b is 0 to 5, c is 0.5 to 10, d is 1, e is 3
9 to 10, $7 \leq a+b+c+d+e \leq 25$, and x is determined by the valence requirements of the
10 elements present in the presence of oxygen.

1 12. The method of claim 11, wherein the catalyst composition of an
2 amorphous structure.

1 13. The method of claim 11, wherein the catalyst has a surface area of
2 from about 130 to about 150 meters squared per gram.

1 14. The method of claim 11, wherein the catalyst was produced at a
2 calcination temperature of from about 450 °C to about 650 °C.

1 15. The method of claim 14, wherein to reach the calcination temperature
2 an elevating temperature velocity of about 20 °C per minute was utilized.

1 16. The method of claim 11, wherein the catalyst composition is on a
2 support.

1 17. The method of claim 16, wherein the support is silica, titania or
2 zirconia.

1 18. The method of claim 16, wherein the support contains substantially no
2 aluminum.

1 19. The method of claim 11, wherein a is from about 0.01 to about 0.1; b is
2 from about 0.1 to about 1; c is from about 0.5 to about 3; e is from about 4 to about 7;
3 and x is determined by the valence of the elements present.

1 20. The method of claim 11, wherein A is at least one of the elements
2 selected from the group consisting of potassium, cesium, magnesium and barium and
3 wherein B is at least one of the elements selected from the group consisting of zinc,
4 nickel, cobalt, iron, bismuth and niobium.